

33

RADIOIMMUNOASSAY OF SERUM GLUCAGON: EVALUATION OF A NEW COMMERCIAL KIT SUPPLIED BY DAINABOT LABORATORY. T. KATSUTA, M. ISHIHARA, K. ISHITOBI, Y. HARADA, M. YAMAWAKI and K. UEYAMA. Tottori University School of Medicine and Tottori Red Cross Hospital. Yonago and Tottori.

A sensitive and precise radioimmunoassay for glucagon using anti-pancreatic glucagon 19-29 serum has been developed by Dainabot Laboratory. This assay was highly specific. Detection limit was approximately 50 pg/ml and standard curve lined up to 1,600 pg/ml. The mean coefficient of intra-assay variation was 6.0±1.6 % and that of inter-assay variation was 7.7±1.7 %. The mean recovery ratio was 110±27 %. The fasting concentrations of glucagon (IRG) were as follows; 62±35 pg/ml in normal subjects (N=86), 104±43 pg/ml in diabetes mellitus who need no drug therapy (10), 273±102 in liver cirrhosis (14), 526±377 in obstructive jaundice (3), 349±226 in insulinoma (2), 130±34 in hyposomatotropic dwarfism (7), 249±65 in hyperglucocortism (8), 333±182 in primary hypothyroidism (3), 111±58 in chronic pancreatitis (9), 84±27 in acromegaly (10) and 58±5 in total pancreatectomy (2). After glucose load, hyperglucagonemic patients usually showed no decrease or/and paradoxical increase of IPG. These results suggest the possibility that serum glucagon might play some role in patients who show glucose intolerance. Further study on IRG will clearly not only those details but also clinical significance of measuring IRG.

36

STUDIES ON CONTROVERSIAL POINTS OF ACTH RADIOIMMUNOASSAY. M. Toyama, T. Ishigami, Y. Kudo, and S. Sato. Kitasato Biochemical Laboratories (Bristol Myers KK), Kanagawa

Two different kind of ACTH kits are commercially available in Japan. One kit from CIS utilizes a direct assay method without extraction of a specimen, and the other kit from RCC utilizes an extraction method.

The advantage of the CIS kit method is that it is simpler and requires less blood plasma than the RCC kit method. However, there are some cases in which falsely elevated ACTH values result. For this reason, it is possible to consider the following three points: (1) presence of non-specific "binder" in plasma, (2) effects of Big-ACTH and various fragments, and (3) non-specific interference by heparin, anticoagulant.

Clinical evaluation of ACTH determination in plasma has mainly two aspects, a pituitary function test and a tumor marker. For a routine test of pituitary function, the simpler CIS kit seems to be useful sufficiently, because the incidence of the abnormally high results is small. But once the false elevation of ACTH level is suspected, careful reexamination by the RCC kit, which is not interfered by Big-ACTH and endogenous ACTH antibody, should be recommended. On the other hand, based on the fact that most of the ectopic ACTH producing tumors produce Big-ACTH, the CIS kit is thought to be suitable for assay of ACTH as a tumor marker.

35

EFFECT OF PASSIVE SMOKING DUE TO INDOOR TOBACCO SMOKE ON PLASMA AND URINARY COTININE LEVELS IN NONSMOKERS. S. Matsukura, S. Sueoka, H. Yoshimi, M. Yokota, Y. Hirata, and T. Fujita. Third Division, Department of Medicine, Kobe University School of Medicine. Kobe.

To evaluate the effect of passive smoking due to the indoor tobacco smoke we measured plasma and urinary cotinine in 10 of each nonsmoker and smoker who were requested to stay in a room (2.6 × 3.8 × 4.8 m³) without ventilation after water load (400 ml orally) from 9 am to 3 pm, during which each smoker smoked 9 cigarettes for the first 90 min. Blood was drawn every 30 min for 1 hr and every hr for following hrs and urine was collected every 30 min, to 3 pm. Plasma and urinary cotinine was determined by a radioimmunoassay recently established in our laboratory (Clin. Pharmacol. Therap. 25:549, 1979). Plasma cotinine levels at 9 am were 259±101 (M±SEM) ng/ml for smokers and 9.6±3.9 ng/ml for nonsmokers but these levels did not change significantly during the experiment. In contrast, urinary cotinine levels in nonsmokers changed from 5.4±2.8 µg/30 min or 159±75 ng/ml before the experiment to 3.7±1.7 µg/30 min or 356±172 µg/ml at 2 pm whereas those for smokers before the experiment, 45.5±15.2 µg/30 min or 1267±449 µg/ml respectively, showed no change. It is suggested that passive smoking due to the indoor smoke may increase urinary cotinine excretion in nonsmokers.

37

RADIOIMMUNOASSAY (RIA) FOR HUMAN β-ENDORPHIN (β-EP). S. Ohnami, S. Nakano, S. Takahashi and T. Nakayama. University of Occupational and Environmental Health. Fukuoka.

β-EP, a fragment of β-lipotropin (β-LPH), is a peptide with strong opioid activity, and its physiological and pathophysiological roles are investigated in several fields of medical science. In this paper, we have examined the specificity of β-EP RIA kit provided by New England Nuclear Corp., and examined plasma levels of β-EP in normal subjects and patients with ectopic ACTH-producing tumor.

The detectability was 3 pg/tube, and 30 pg/ml of plasma was possible to assay. When the crossreactivity of ACTH and β-LPH related peptides such as ACTH, α-melanocyte stimulating hormone (α-MSH), corticotropin-like intermediate lobe peptide, β-LPH, γ-LPH, β-MSH, γ-EP, β-EP fragment (17-30), α-EP and methionin-enkephalin were examined, β-LPH and β-EP fragment (17-30) were reacted equally to β-EP on a molar basis, indicating that the RIA system recognized the carboxyl portion of β-EP molecule.

In 15 normal subjects, plasma β-EP levels were from 30 to 150 pg/ml. On the other hand, two patients with ectopic ACTH-producing tumor had elevated plasma β-EP levels (280, 520 pg/ml). Further characterization will be needed to know the actual concentration of β-EP in these plasma samples, because β-EP could not differentiate from β-LPH in this RIA system.